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**APPARATUS AND METHOD FOR BROADCASTING
MESSAGES TO SELECTED GROUP(S) OF USERS**

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Field of the Invention

This invention relates to broadcasting to a group(s) or subset(s) of users in a manner that effects the efficient selection of the user to receive the message and to permit the transmitted message to be customized to the needs of the users.

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BACKGROUND OF THE INVENTION

Since September 11, 2001, the need to warn people of threatened property damage and personal injury from a variety of natural and man-made potential disasters has been seen as a high priority need. Typical threatened disasters include natural disasters from weather, such as tornados, hurricanes, mud slides, floods and wind shear, as well as man made disasters, such as those resulting from terrorist attacks, fire, radiation leakage, toxic chemical leakage or bomb threats. Ordinarily, the earlier people and communities are alerted to such threats so that they can make preparations for protecting themselves from them, the less the property damage or personal injury resulting from these threatened disasters.

It is estimated by the partnership for Public Warning that nearly a thousand people involved in the September 11 attack could have escaped the second tower in time to save their lives, had they been able to receive accurate information about what was going on. When the first plane hit, it blew out the electricity, phone lines, and cellular towers. This meant the occupants had no sources of information, relying instead on the inaccurate instructions of the building superintendent, who told everyone to remain at their desks.

Further, the Emergency Alert System (EAS) was not activated that day (for no known reason). But even if it did activate, it would have done nothing to help people most in peril, since they had no access to radio and TV, the only mediums the EAS is authorized to use.

What was needed was a ubiquitous mobile system that could be used in the absence of power and phone lines, to reach people in high risk areas, with government sanctioned information about the emergency, customized per location, and specific, ongoing instructions for post event safety.

5 There are already in place and operational a variety of prior art systems for warning or alerting people to disaster threats. These most prominently include the public media, such as radio and television news and weather broadcasts and the weather radio system operated by the National Weather Service. These systems, however, are subject to deficiencies because they require radio transmissions broadcast from transmitters located in the region of the disaster, and
10 require that individuals have their radio or television equipment turned on, operating and being observed by the individuals. Persons who are not operating such equipment do not receive an alert, unless they are fortunate enough to have someone nearby who has received the alert and who is aware of their presence and goes to the effort to give them a personal warning.

 Additionally, there are siren warning systems to alert members of the public who are in
15 danger of a threatened disaster. These systems are also subject to deficiencies because some areas are not equipped with such siren warning systems and the sirens can be difficult or impossible to hear when there is ambient noise, such as from construction or traffic or a heavy storm or when the sirens are simply too far off to be heard.

 There are also a variety of additional warning systems, mostly radio operated, which
20 require specialized equipment. Very few people purchase such equipment and therefore these systems are not effective in providing sufficient warning to large numbers of people.

 The infrastructure of the United States and many other countries currently includes a national telephone system which provides a communication system which is widely distributed and provides the most personal route to connection to the greatest number of people.

25 However, the present warning systems suffer a number of deficiencies. First, they do not have the capability of automatically sending a message to a particular group of message recipients. In emergency situations, it is important to be able to warn or to alert those who are in immediate danger and/or those recipients who are police or firefighters and who would respond to such emergencies. Further, it is important for those in authority and who are authorized to
30 respond quickly to such emergencies, be alerted first. Others, for example those who are in harms way, must also be alerted though at a latter time. Thus, it would be important to have an

effective warning system with the ability to prioritize the messages that are broadcast; for example, it would be desirable to send a first set of messages to certain users, e.g., officers in a fire department or the police, before sending a set of messages to those in the area, which is threatened by the emergency.

5 Still further, it is appreciated that each group of users may require a different message. In such a case, the broadcast alerting system would need to send different, customized messages to each of these groups of people, e.g., a first message to the police and another, different message to those residing in the region where the emergency has occurred.

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SUMMARY OF THE INVENTION

It is therefore an object of this invention to provide a new and improved message broadcast system that is capable of quickly and efficiently sending a message via a data transmission medium to a selected number of message recipients or users.

15 It is a further object of this invention to provide a new and improved message broadcast system that is capable of customizing the transmitted message to the particular group of people and/or to the nature of the event that may potentially affect this group.

It is a still further object of this invention to provide a new and improved message broadcast system that can prioritize the sending of a message to that one of the groups of people, which has the greatest need to receive the message.

20 In accordance with these and other objects of this invention, a method of transmitting a message to at least one group of users selected from a population of users is disclosed. The method comprises assigning to each member of the one group a common characteristic, collecting from each member of the population an address to which the message may be sent, selecting the common characteristic, determining each user of the group according to the selected
25 common characteristic, and selecting a message and transmitting the selected message to each member of the selected group.

In accordance with another object of this invention, the common characteristic may include a region to which the user is associated.

In accordance with a further object of this invention, the step of transmitting a message captures the stored address and inserts it into the message, whereby the message is sent to each user of the group with the common characteristic.

In accordance with a still further aspect of this invention, apparatus is disclosed for
5 transmitting a message to a plurality of group(s) of users selected from a population of users. The apparatus comprises a database; and a server programmed to implement the following steps:
1) facilitating each member of the population of users to transmit via an Internet and to store in said database an address whereby a message may be sent to that user, and 2) facilitating each
10 user to select a characteristic of the group to which the user belongs and to store the selected characteristic in the database.

In accordance with a further object of this invention, the server is further programmed to facilitate an administrator to select and to transmit via the Internet a characteristic to the server, determining each user of the group which has the selected common characteristic, and transmitting a selected message to each determined member of the group with the common
15 characteristic.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing objects and advantages of the present invention may be more readily understood by one skilled in the art with reference being had to the following detailed description of a preferred embodiment thereof, taken in conjunction with the accompanying
20 drawings wherein like elements are designated by identical reference numerals throughout the several views and in which:

FIG. 1 is a functional block diagram illustrating how a user's terminal, an administrator's terminal and a server of a website are used to send messages to a group or groups of users where each group has a common characteristic;

25 FIGS. 2A and B are flow diagrams, which respectively prompt a user to input contact data and to identify the characteristic of the group to which the user is associate, and to transmit a message to each member of a group having the characteristic selected by the administrator;

FIGS. 3A and B, and C-E respectively illustrate a first web page or screen showing how the group characteristic for a particular message is selected, and how a message is selected
30 and/or composed.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

Referring now to the drawings and in particular to FIG. 1, there is shown an illustrative embodiment of this invention which uses a message broadcast system 10 to broadcast or transmit messages to a selected group(s) or subset(s) of a population of users or message recipients. The system 10 comprises a plurality of user terminals 28a-n and 34a-n, and an administrator terminal 16, each of which is interconnected by a bi-directional network to a website 20. The website 20 in turn comprises a web server 22 and a registration database 24 where, as will be explained below in greater detail, data related to the users is stored. The web server 22 operates as will be explained in detail below to transmit or broadcast messages in a first direction either via a modem 18a, the Internet 12, a modem 18b and an Internet Service Provider (ISP) 26 to the terminals 28a-n, or via the modem 18a, the Internet 12, a modem 18c, a telecommunications provider 30 and a wireless communication device 32 to the terminals 34a-n. The system 10 is capable of transmitting text and voice messages. To transmit text messages, the system 10 utilizes the ISP 26 and a variety of the terminals 28a-n such as a personal computer (PC) 28-1, a workstation 28-2 and/or a personal digital assistant (PDA) 28-3. In a wireless voice embodiment, the system 10 includes cell phones 34a-n, the telecommunications provider 30 and the wireless communication device 32. As will be explained below, each of the terminals 28a-n and 34a-n can transmit signals in a second opposite direction via the modems and the Internet 12 to the website 20.

Referring now to FIG. 2A, there is disclosed how the web server 22 may be set up as a website 20, which each of the users may access to input contact and other data into the registration database 24. First in step 52, the user accesses the website 20 by use of the terminals 28a-n and 34a-n and, in step 54, accesses from the registration database 24 a web page to be displayed on the terminal 28 or 34 in the form of the registration page or screen 80, as shown in FIG. 3A. In an illustrative embodiment of this invention, the web server 22 is programmed to receive and store a data characteristic or indication of a group or subset of the users. In an illustrative embodiment of this invention, the characteristic or common criteria of the group or subset of users may take the form of a zip code of the user's residence, place of business or related in some fashion to the user. Upon display in step 54 of the registration screen 80, the user may manually actuate in step 56 a button 82 to permit the user to select certain region(s) that correspond to a particular zip code(s). As shown in FIG. 3A, various regions of the boroughs of

New York City are set out, each region corresponding to a particular zip code(s). To select one or more such regions, the user clicks on one of the regions 82a-n and associates that region to the user's contact data by clicking on the add button 84a, whereby as shown in FIG. 3B, these selected regions, e.g. southern Manhattan 86a and northern Brooklyn 86b, are added to a display field 86.

Further, the data secured from the user would also include the web addresses of the terminals 28, as well as the telephone numbers of the cell phones 34, whereby messages may be directed to certain terminals as set by the user. Though not shown in FIGS. 3A, B and C, the web pages are shown to the user at their terminals 28a-n and 34a-n to prompt the user to input contact data, an indication of the group or subset characteristic as described above, and the addresses of the terminals 28 and 34. After the contact data, the subset characteristic and the terminal addresses have been entered in step 56, the user actuates a button 83 (FIG. 2A) to save in step 58 the user's contact data and the subset characteristic to the registration database 24.

Referring now to FIG. 2B, there is shown a process by which an administrator using its administrator terminal 16 as shown in FIG. 1 is enabled to provide a selective message to be sent to a selected one or more of the subset(s) or group(s) of users. As shown in FIG. 2B, the administrator using his terminal 16 downloads in step 62 a screen 90 as shown in each of FIGS. 3C, D and E. As shown particularly in FIG. 2B, the administrator may selectively choose in step 62 the criteria for the user subset(s) or group(s) by clicking on a button 92 of the screen 90 (FIG. 3C). In the illustrative embodiment where the group criteria is in the form of a geographical region and/or zip code(s), the administrator enters at least one zip code into the field 93. The administrator may also enter a number or plurality of zip codes and may place them in the order in which messages are to be transmitted to the groups of users that are identified by those zip codes.

After selecting and entering the criteria for the user subset, the administrator is then ready to select in steps 64a and b a message to the users of the selected group of users. The administrator may provide the message to be sent to a selected group or subset of users in at least two different ways. In step 64a as shown in FIG. 2B, the administrator may select a message to be broadcast from a group of possible messages. In particular, the user may click on its "warning type field" 96 (FIG. 3C), where a pop up menu 100 appears upon the screen 90 as shown in FIG. 3D listing the various types of warnings or messages that may be sent. The

administrator selects one of the messages by clicking thereon to illustratively select the “health & biological-Ricin” message 100’. Optionally, the administrator may display in the field 97 a previously selected message and edit it. Alternatively, the administrator may compose in step 64b and type a particular message in its data input field 97 as shown in FIG. 3C.

5 The administrator also has the option to actuate in step 66 a button 98 (FIG. 3E), whereby messages are sent to all of the entered zip codes as shown in FIG. 3C. The administrator is also given the option to not only send messages to the zip code or codes, but may also send the message to selected other areas of particular priority. For example, the administrator may actuate a button 95a, whereby the message is sent to the major transportation hubs, or a button
10 95b whereby the message is sent to the landmarks of a particular city. A reset button 99 is also displayed by the screen 90, providing the administrator an opportunity to change and/or correct the various settings that the administrator has made in step 62, 64 and 66.

 As shown in FIG. 3E, there is associated with the message entry field 97, a field 102 which permits the web server 22 to count the characters comprising the messages entered in the
15 message field 97 whereby the number of characters in a message may be limited. The current number of characters in the message being prepared and the total number of permissible characters are shown in the field 103 to the administrator.

 In step 66 (FIG. 2B), the web server 22 (FIG. 1) accesses the contact data and the group criteria as stored in the registration database 24 and, using the address or addresses of each user,
20 transmits a message to each user of the selected group or subset. As shown in FIG. 1, the web server 22 transmits these messages via the Internet 12 to each of the ISPs 26 and/or the telecommunication provider 30. Each transmitted message, as explained above, includes an address identifying the particular terminal 28a-n or 34a-n that the user has designated for receipt of its message. For example the selected terminal may take the form of the PC 28-1, the work
25 station 28-2 or a PDA 28-3. It is contemplated that a particular user may have a terminal 28 for receiving text messages but also may have a portable wireless device such as a cell phone 34 for receiving voice messages. In that instance, the message would bear the telephone number of that cell phone 34 and would be sent via the telecommunication provider 30, the wireless transmission system 32 to one of the cell phones 34.

30 In a preferred embodiment of this invention, the short message service (SMS) is used as the primary mode of communications over cell phones dramatically thereby reducing the

overages in capacity felt in both 9/11 and the 2003 blackout in the Northeast. A public service campaign to educate citizens about the system would necessarily admonish people to use only SMS in times of emergency, and only with "necessary" communications. This must be done to protect the integrity of the cell phone system, and prevent it from collapsing beneath the weight of voice and multimedia messaging, such as photos and other images.

In the illustrative embodiment of this invention described above, the criteria, attribute or characteristic of the group or subset was selected as a zip code. In that embodiment, the administrator can quickly address a plurality of messages to each of the users within the selected group or subset, e.g., to each member that is within the selected zip code or zip codes. However, this invention is not limited to the use of zip codes as categories. For example the criteria could take the form of the title or function of the user. For example if this invention were to be employed to send messages of some emergency or disaster, the criteria maybe selected in terms of the function or title of the users. If the contemplated users were police or fireman, the criteria maybe selected in terms of the rank or function of a particular officer. For example, it may be desired to send messages only to those firemen or policemen of a certain rank. As indicated above, the messages may be sent in order of priority. In a contemplated disaster, it would be desirable to send the first warning messages of an accident or disaster to high ranking officers or firemen so that they may take immediate control of the situation. In a further illustrative example of this invention as related to the sale of securities, the group criteria may identify users who own a particular security. Thus this invention could be used to send messages about a certain stock to the holders of that stock. In this example, the group criteria would be ownership of that stock.

This invention is of use when one needs to instantly reach hundreds or even millions of people simultaneously, wherever those people may be scattered. The messages can be sent to selected recipients dependent on the characteristics or identifications of a recipient, including location, ranking, title or specific informational requests by recipient, such weather, traffic, horse races, or specific lottery drawings. Other uses include localized rush hour alerts (tie ups at one tunnel, so use another) and classify users by those zip codes in which travelers are most interested in, as well as bridges, tunnels, and/or highways. Messages may be broadcast from schools (no school today for certain grades) where schools or students are classified by zip codes, by school grade, or by a particular teacher. Corporate broadcasts may be made to

employees around the world, by title, country, division, or those most affected by a certain type of news or event. Messages may be sent that warn of disease outbreaks to people who have recently traveled to a certain country, were recently diagnosed with related symptoms, to patients of a certain doctor, or to those who have recently been on a plane with a highly contagious
5 passenger.

In a further application, this invention may also be applied to other events. In the context of reporting results of racing events, the group criteria may identify users who would like to be informed of races that take place on a given day, at a certain track, during a specific race or races, or featuring a given horse or rider. In the example of reporting, the results of lotteries, the
10 group may identify users who would like to be informed of lottery results in given states, or of multi-state lottery games, or games ending on specific dates or succession of dates that winning numbers are announced. In the context of scheduling of airline flights, the group criteria may identify users who would like to be informed of departure and arrival times, as well as delays, cancellations, and alternative available flights. This invention could be adapted to report the
15 results of sporting events, where the group criteria relates to selected teams, leagues, players, or school teams, and scores by inning, quarter, or the whole game. This invention also has application to reporting election results, and weather forecasts for certain regions.

Although the present invention has been described in terms of various embodiments, it is not intended that the invention be limited to those embodiments. Modification within the spirit
20 of the invention will be apparent to those skilled in the art. The scope of the present invention is defined by the claims that follow.